CKOV MC Validation

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* I've looked at the CKOV MC for the NuMI target data processed using pass4d (pre delta-ray retune) and compared the CKOV response in several momentum slices to the data. The slices are chosen in regions

  [1] below pion threshold,

  [2] between pion and kaon threshold

  [3] above kaon threshold and below proton threshold

  [4] above proton threshold, but below where there is significant beam contamination, and,

  [5] high momentum dominated by beam particles

* Minimal track cuts: "Clean" CKOV track vertex with lxl<10 cm lyl<10 cm, p>200 MeV, 15 or more TPC hits, more than 0.5 pe in CKOV

* Things look in general OK although I think things could be tuned better

  * MC seems to have about 25% less light than data

  * Larger number of below-threshold tracks associated with CKOV light in MC compared to data

0.2 GeV/c < p < 2.5 GeV/c

electrons
pions
kaons
protons

$q \times$ CKOV signal [normalized to $\beta = 1$]

17 GeV/c < p < 61 GeV/c

electrons
pions
kaons
protons

$q \times$ CKOV signal [normalized to $\beta = 1$]